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September 2015

# BC337 / BC338 NPN Epitaxial Silicon Transistor

## Features

- Switching and Amplifier Applications
- Suitable for AF-Driver Stages and Low-Power Output Stages
- Complement to BC327 / BC328



## Ordering Information

| Part Number | Top Mark | Package  | Packing Method |
|-------------|----------|----------|----------------|
| BC33716BU   | BC33716  | TO-92 3L | Bulk           |
| BC33716TA   | BC33716  | TO-92 3L | Ammo           |
| BC33716TFR  | BC33716  | TO-92 3L | Tape and Reel  |
| BC33725BU   | BC33725  | TO-92 3L | Bulk           |
| BC33725TA   | BC33725  | TO-92 3L | Ammo           |
| BC33725TAR  | BC33725  | TO-92 3L | Ammo           |
| BC33725TF   | BC33725  | TO-92 3L | Tape and Reel  |
| BC33725TFR  | BC33725  | TO-92 3L | Tape and Reel  |
| BC33740BU   | BC33740  | TO-92 3L | Bulk           |
| BC33740TA   | BC33740  | TO-92 3L | Ammo           |
| BC33825TA   | BC33825  | TO-92 3L | Ammo           |

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol    | Parameter                 | Value      | Unit             |   |
|-----------|---------------------------|------------|------------------|---|
| $V_{CES}$ | Collector-Emitter Voltage | BC337      | 50               | V |
|           |                           | BC338      | 30               |   |
| $V_{CEO}$ | Collector-Emitter Voltage | BC337      | 45               | V |
|           |                           | BC338      | 25               |   |
| $V_{EBO}$ | Emitter-Base Voltage      | 5          | V                |   |
| $I_C$     | Collector Current (DC)    | 800        | mA               |   |
| $T_J$     | Junction Temperature      | 150        | $^\circ\text{C}$ |   |
| $T_{STG}$ | Storage Temperature       | -55 to 150 | $^\circ\text{C}$ |   |

BC337 / BC338 — NPN Epitaxial Silicon Transistor

**Thermal Characteristics<sup>(1)</sup>**

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol          | Parameter                               | Value | Unit                      |
|-----------------|---|-------|---------------------------|
| $P_D$           | Power Dissipation                       | 625   | mW                        |
|                 | Derate Above $25^\circ\text{C}$         | 5.0   | mW/ $^\circ\text{C}$      |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 200   | $^\circ\text{C}/\text{W}$ |

**Note:**

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

**Electrical Characteristics**

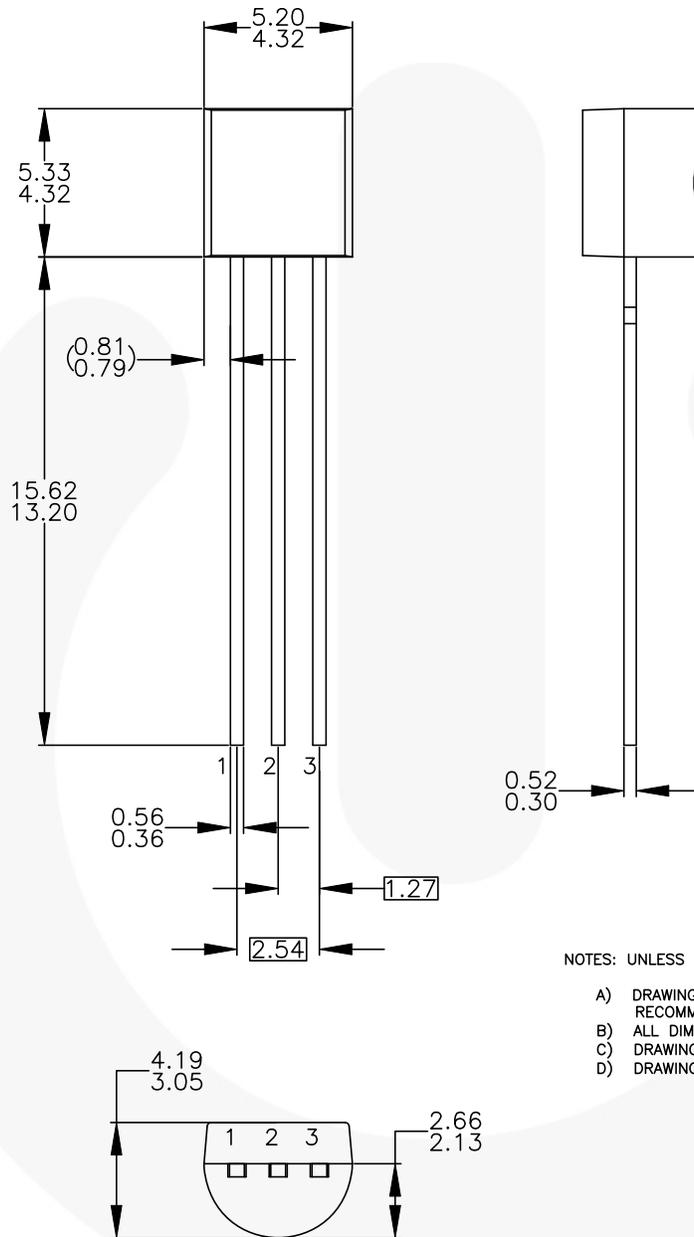
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol        | Parameter                            | Conditions   | Min.                                       | Typ. | Max. | Unit |    |
|---------------|--------------------------------------|--|--|------|------|------|----|
| $BV_{CEO}$    | Collector-Emitter Breakdown Voltage  | BC337  | $I_C = 10\text{ mA}, I_B = 0$              | 45   |      | V    |    |
|               |                                      | BC338  |  | 25   |      |      |    |
| $BV_{CES}$    | Collector-Emitter Breakdown Voltage  | BC337  | $I_C = 0.1\text{ mA}, V_{BE} = 0$          | 50   |      | V    |    |
|               |                                      | BC338  |  | 30   |      |      |    |
| $BV_{EBO}$    | Emitter-Base Breakdown Voltage       | $I_E = 0.1\text{ mA}, I_C = 0$                               | 5  |      |      | V    |    |
| $I_{CES}$     | Collector Cut-Off Current            | BC337  | $V_{CE} = 45\text{ V}, I_B = 0$            |      | 2    | 100  | nA |
|               |                                      | BC338  | $V_{CE} = 25\text{ V}, I_B = 0$            |      | 2    | 100  |    |
| $h_{FE1}$     | DC Current Gain                      |  | $V_{CE} = 1\text{ V}, I_C = 100\text{ mA}$ | 100  |      | 630  |    |
| $h_{FE2}$     |                                      |  | $V_{CE} = 1\text{ V}, I_C = 300\text{ mA}$ | 60   |      |      |    |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 500\text{ mA}, I_B = 50\text{ mA}$                    |  |      | 0.7  | V    |    |
| $V_{BE(on)}$  | Base-Emitter On Voltage              | $V_{CE} = 1\text{ V}, I_C = 300\text{ mA}$                   |  |      | 1.2  | V    |    |
| $f_T$         | Current Gain Bandwidth Product       | $V_{CE} = 5\text{ V}, I_C = 10\text{ mA}, f = 50\text{ MHz}$ |  | 100  |      | MHz  |    |
| $C_{ob}$      | Output Capacitance                   | $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$            |  | 12   |      | pF   |    |

 **$h_{FE}$  Classification**

| Classification | 16        | 25        | 40        |
|----------------|-----------|-----------|-----------|
| $h_{FE1}$      | 100 ~ 250 | 160 ~ 400 | 250 ~ 630 |
| $h_{FE2}$      | 60 ~      | 100 ~     | 170 ~     |

Physical Dimensions



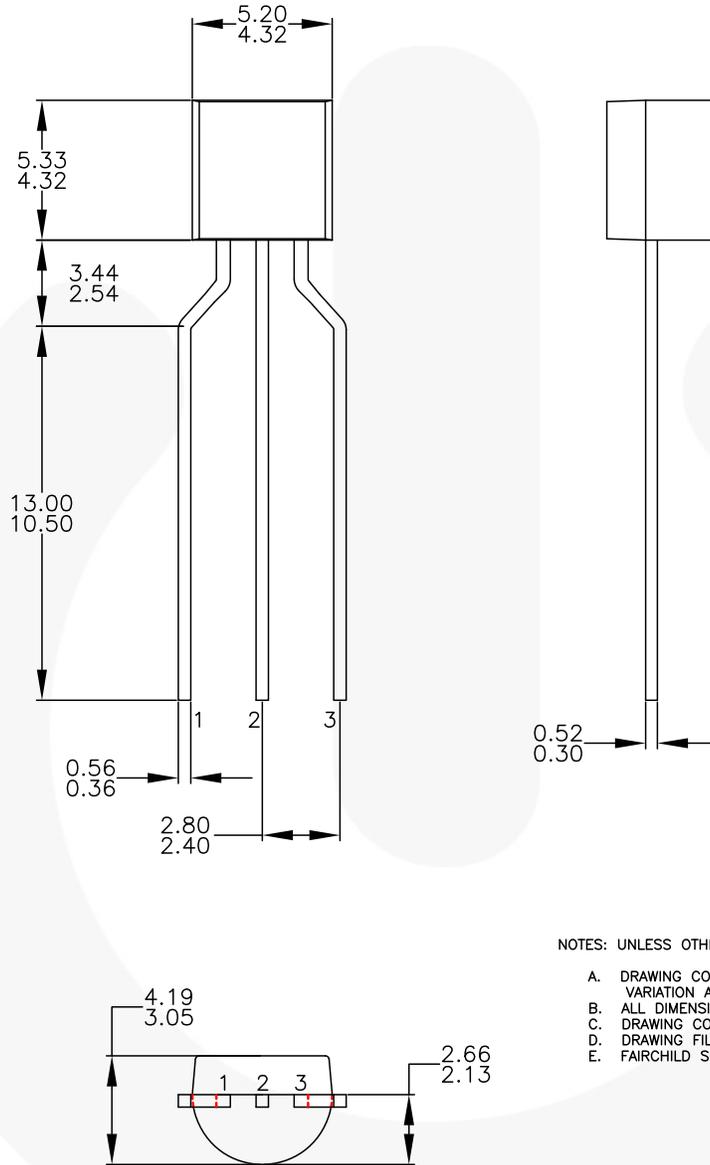
NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-2009.
- D) DRAWING FILENAME: MKT-ZA03DREV4.



Figure 1. 3-Lead, TO-92, JEDEC TO-92 Compliant Straight Lead Configuration, Bulk Type

Physical Dimensions (Continued)



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Figure 2. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Type



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